

# SUPPLEMENTARY MATERIAL 1: DETAILED DESCRIPTION OF TESTS

This supplementary material describes the tests used in the pre-training, post-training, 26-week follow-up, and 52-week follow-up tests. Moreover, the instructions given to the participants are also outlined. During the trial, all instructions were provided in Danish; however, this supplementary material is directly translated into English.

The order of the test was identical at each testing session at was as follows: 1) Trial-making-test, 2) balance, 3) choice stepping reaction time, 4) gait, 5) short physical performance battery, and 6) questionnaires.

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# TRIAL MAKING TEST

## Description

The executive function is evaluated using the Trial-Making-Test (TMT) Part A and B. Part A involves sequentially connecting 25 randomly arranged numbers (1- 2- 3-...-25) on paper with a pen. In Part B, 25 randomly placed numbers and letters (1- A- 2- B-...-12- L) are connected alternately. The time to complete Part A and Part B was recorded using a handheld stopwatch, and the number of mistakes was registered.

## Instruction

“[Show the practice sheet of Part A] In this test, you must sequentially connect the numbers; from 1 to 2, from 2 to 3, and so on [point on the paper]. This is a practice sheet before we move on to the actual test. [participant performs practice sheet]. If you make a mistake, I will highlight it by making a perpendicular line, and you will return to the previous number. I will not tell you what the mistake was.”

“[Show the test sheet of Part B] Now we move on to the actual test. In this test, you must connect 25 numbers in the same manner as on the practice sheet. You will begin at 1 [point at number 1] and finish at 25 [point at number 25]. You must connect the numbers as fast as possible and with as few mistakes as possible. I will count from 3, and you may start on “go”. “

“[Show the practice sheet of Part B] In the next part of the test, you must alternately connect the numbers and letters; from 1 to A, from A to 2, from 2 to B, and so on [point on the paper]. This is a practice sheet before we move on to the actual test [participant performs practice sheet].”

“[Show the test sheet for Part B] Now we move on to the actual test. In this test, you must connect the 25 numbers or letters in the same manner as on the practice sheet. You will begin at 1 [point at number 1] and finish at “L” [point at “L”]. You must connect the numbers as fast as possible and with as few mistakes as possible. I will count from 3, and you may start on “go”. “

## BALANCE TEST

### Description

The balance test was conducted using a Wii balance board (WBB) and the Fysiometer software. Participants stood as still as possible for 30 seconds for three trials under single- and dual-task conditions, respectively. The dual task condition involves naming grocery items from specific supermarket sections. During the test, the participant was instructed to look at a fixed mark at eye height three meters in front of the participant. The area and speed of the centre of pressure displacement were registered in the FysioMeter software.

### Instruction

“During the balance test, you must step onto the Wii balance board and place your feet so the outside of your foot is aligned with the edge of the Wii balance board [guide the foot placement of participant]. You will have to stand as still as possible for 30 seconds while looking at the mark in front of you [pointing at the mark] and holding your wrist [illustrate the arm position]. You will have to perform three trials only focusing on standing still, and then three times while simultaneous mentioning grocery items from the supermarket. Are you ready for the first 30 seconds?”

[Immediately before each 30-second trial, the following is instructed] “Look at the mark in front of you and attempt to stand as still as possible; the 30 seconds will start in 3, 2, 1, now.”

“For the next three trials, you will have to stand in the same position as before [make sure foot placement is correct] as still as possible for 30 seconds while also mentioning as many grocery items as possible. Before each trial, I will tell you which supermarket section you must mention items. Are you ready for the first 30 seconds?”

[Immediately before each 30-second trial, the following is instructed] “Look at the mark in front of you, hold your wrist, and attempt to stand as still as possible, while also mentioning as many items from the [insert supermarket section (dairy, greens, or butchers department)]; the 30 seconds will start in 3, 2, 1, now.

# CHOICE STEPPING REACTION TEST

## Description

The choice stepping reaction test was conducted using a Wii balance board and the FysioMeter software. The participants had to react as fast as possible by tapping the correct side of the WBB with the correct foot in response to a visual cue presented on a computer screen seven times. The WBB was placed approximately five cm in front of the participants' feet, and the computer screen was one meter away. A WBB was shown on the computer screen, and the cue was a green light on either the right or left of the WBB. The timing (1-4 seconds) and side were random to maximize the unpredictability. The time from the cue was given to the correct response was performed was recorded with the FysioMeter software.

## Instruction

“For the reaction test, you must stand with the feet behind each side of the Wii balance board [guide the foot placement of participant]. A Wii balance board is illustrated on the screen in front of you. When I press “start”, the left or right side will turn green after one to four seconds. You must tap on the correct side, as fast as possible, with the correct foot. If it is the left side, you must use the left foot, and vice versa. Before we begin, you will have three practice trials. Remember to focus on being as fast as possible.”

[Participants get three attempts]

“Now we progress to the real test, and you will have to perform seven reaction trials. Remember to be as fast as possible.”

## GAIT TEST

### Description

The gait test involved walking eight meters at the preferred walking speed for a total of six trials. The initial three were conducted as a single task, while the last three were under a dual-task condition. The dual task involved continuously subtracting three from a random three digits number. The middle six meters will be recorded using a handheld watch.

### Instruction

“During the gait test, you must walk 8 meters from the initial line through the end line [pointing at the two lines]. You will have to walk six times, the first three trials only focusing on walking, while the last three will also involve arithmetics. During the trials, you will have to walk at your regular pace. I will say “3, 2, 1, go”, and on “go”, you can walk.”

[Participant completes three trials as a single task]

“During the next three trials, you will have to walk at your regular pace and simultaneously perform arithmetics. Before each trial, I will tell you a number, which could, for example, be 150. You will then have to continuously subtract three from that number while walking at your regular pace. If the number is 150, it will look like this [illustrate the test by walking and subtracting three]; 147, 144, 141, 138, and so on until you are at the end of the path [pointing at the end]”

[Participant completes three trials as a dual task with three different numbers]

## THE SHORT PHYSICAL PERFORMANCE BATTERY

### Description

The short physical performance battery consists of a balance, gait, and strength component. The balance component includes standing in three foot positions (side-by-side, semi-tandem, and tandem) for ten seconds. The gait component involves two four-meter walks at a preferred walking speed, and the strength component consists of five sit-to-stands as fast as possible. Each element is scored based on performance and collected in a composite score (0-12; higher scores indicate better performance).

### Instruction

“First, you have to perform a balance test. You have to stand for ten seconds with three different foot positions. During the ten seconds, you are not allowed to move your feet or grab any obstacles to regain balance. The first foot position is a side-by-side position [show the foot position and correct the participant's position]. When you feel in balance, say “go,” and the ten seconds will begin.”

[If the participants complete progress to the next foot position, if not, the balance test is over]

“The next foot position is a semi-tandem foot position [show the foot position and correct the participant's position]. When you feel in balance, say “go,” and the ten seconds will begin.”

[If the participants complete progress to the next foot position, if not, the balance test is over]

“The next foot position is a tandem foot position [show the foot position and correct the participant's position]. When you feel in balance, say “go,” and the ten seconds will begin.”

“The next test is a 4-meter walking test; you must walk 4 meters from the initial line through the end line [point at the two lines] two times at your regular pace. I will count from 3, and on “go”, you begin.”

“The last part of this test battery is a strength test, where you must stand up from a chair five times as fast as possible. Please sit in the chair and cross your hands in front of your chest [illustrate the arm position]. Now stand up and sit down once. You will have to repeat those five times as fast as possible. I will count from 3, and the time begins on “go”. When you stand up the fifth time, the time will stop.” [count for each repetition].

## QUESTIONNAIRES

### Instruction

“You must fill out this questionnaire which involves a variety of questions that relates to the risk of falling and your well-being. You must read the questions thoroughly and provide a response that describes you the best. If you have any questions regarding understanding the question, you are welcome to ask me; however, I will not be able to help you answer the questions.”